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December 28, 2010

Arizona Corporation Commission
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Docket Control
Arizona Corporation Commission
1200 W. Washington
Phoenix, Arizona 85007

Re: UNS Electric, Inc. School Facilities Efficiency Program
Docket No. E-04204A-07-0365

Pursuant to Decision No. 71914, UNS Electric, Inc. ("UNS Electric") was required to file a school-specific program for energy efficiency in the DSM docket within three months from the date of this Decision. Please find attached UNS Electric's School Facilities Efficiency Program ("Program"). UNS Electric will be filing for approval of this Program in its Electric Energy Efficiency Implementation Plan in compliance with A.A.C. R14-2-2405.A.

If you have any questions, please contact me at (520) 884-3664.

Sincerely,

Melody Gilkey

Melody Gilkey

cc: Compliance, ACC

UNS Electric, Inc.

School Facilities Efficiency Program

Table of Contents

UNSE School Facilities Program

Program Description

The UNS Electric, Inc. ("UNSE") School Facilities Program ("Program") is open to participation by all existing school facilities in the UNSE service territory, including charter schools. The proposed Program will utilize the same delivery method and pay incentives for the same demand side management ("DSM") measures as the existing UNSE Commercial Facilities Efficiency Program, but with a separate budget reserved for schools. Incentives for the Program will also be paid at a higher level than for the Efficiency Program.

- The Program will offer incentives for a select group of retrofit and replace-on-burnout ("ROB") energy efficiency measures in existing school facilities. The efficiency measures offered include high-efficiency lighting equipment upgrades, high-efficiency HVAC equipment, lighting controls, programmable thermostats, and selected refrigeration measures.
- The direct install component will utilize an on-line proposal generation and project tracking application to reduce the transaction costs. Proposed incentives for DSM measures are identical to the incentive structure in the UNSE Commercial Facilities Efficiency Program; however UNSE proposes to pay up to 100% of incremental costs for schools. The Program will have a separate incentive budget of $72,248 per year which is reserved exclusively for school use. If schools oversubscribe the budget, they will be allowed to request participation in the UNSE Commercial Facilities Efficiency Program which only pays up to 85% of incremental cost.

Program Objectives and Rationale

The primary goal of the Program is to encourage schools in UNSE's service territory to install energy efficiency measures in existing facilities. More specifically, the Program is designed to:

- Encourage schools to install high-efficiency lighting equipment and controls, HVAC equipment, and energy-efficient refrigeration system retrofits in their facilities (see **Error! Reference source not found.**, School Facilities Efficiency Incentive Summary, for the schedule of measures and incentives).
- Encourage contractors to promote the Program and provide turn-key installation services to schools.
- Assure that the participation process is clear, easy to understand and simple.
- Increase the awareness and knowledge of school facility managers and other decision-makers on the benefits of high-efficiency equipment and systems.

Since 2008, participation by schools in the UNSE Commercial Facilities Efficiency Program has been modest. In order to increase participation in energy efficiency retro-fits by schools, UNSE has developed this Program, which proposes to fund up to 100% of installed costs while engaging the contractor community to provide turn-key services. This is a 15% increase from the 85% allowed in the UNSE Commercial Facilities Program. The Schools Program will follow the design of the UNSE Commercial Facilities Efficiency Program because the direct-install concept has a proven track record of high participation and cost-effective life cycle savings for hard-to-reach markets, including schools.

Target Market

The target market for this Program is all kindergarten through twelfth grade ("K-12") public schools, including charter schools, in the UNSE service territory.

Program Eligibility

Customers must receive electric service from UNSE to be eligible for participation. For the purposes of this Program, school is defined as a "school entity." In the case of traditional public schools, a school entity is a public school district. In the case of a charter school, a school entity is one that has a state charter.

Current Baseline Conditions

Schools represent a market segment that has historically been underserved. This Program has been designed explicitly to increase the participation of schools in the UNSE DSM programs. Incentive levels and Program structure have been customized to address and overcome market barriers.

Products and Services Provided

The Program has an upstream market incentive design that provides incentives directly to installing contractors for the installation of energy efficiency measures. More specifically, the Program offers the following products and services:

- Educational and promotional pieces designed to assist contractors with marketing the Program to schools; and
- Education and promotional efforts for schools and contractor allies on how the Program functions, what energy efficiency technologies are offered, what incentives are provided and the benefits of the measures.

The lighting measures to be included in the Program are:

- T8 retrofits – retrofit of T12 fluorescent lighting with T8 lighting.
- Screw-in compact fluorescent light ("CFL") retrofits – replacement of incandescent lamps with screw-in fluorescent lamps.
- Exit sign retrofits – retrofit of incandescent and CFL exit signs with LED or electroluminescent exit signs lighting.
- Occupancy sensors – installation of occupancy sensor controls on lighting systems.
- De-lamping – de-lamping of lower efficiency fluorescent lighting fixtures or overlit areas.
- Reduced lighting power density ("LPD") – bringing lighting levels down to appropriate levels.
- High intensity discharge ("HID") lamps – to T8 or T5.

- Standard T8 to premium T8

The HVAC measures to be included in the Program are:

- High-efficiency AC/HP – installation of high-efficiency packaged air conditioners and heat pumps.
- Programmable thermostats – replacement of standard thermostats with programmable set-back thermostats.
- Shade screens and window films to reduce solar insolation.

The Program will also utilize variable speed drive motors to optimize performance, vending miser sensors, which turn off or turn down refrigeration and lighting on vending machines when not in use, and smart strips to better control plug loads. Whole Building custom incentive applications will also be considered where appropriate. Additionally, see Table 1 for a summary of the incentives offered for each of the Program measures.

Table 1. School Facilities Efficiency Incentive Summary

LIGHTING MEASURES	COST PER FIXTURE
Replace T12 Systems & Magnetic Ballasts w/ T8 Systems & Electronic Ballasts	$55/fixture
Energy Efficient Integral Compact Fluorescent Lighting	$11/lamp
Replace Incandescent and CFL Exit Signs	$55/sign
Install Occupancy Sensors on Lighting Fixtures	$96/sensor
Daylighting controls	$751/kW base load
Hard Wire CFL	$15/bulb
HIDs to T8/T5	$96/fixture
Induction Lighting	$196/lamp
Outdoor CFL	$9/lamp
Reduced LPD	$4,472/customer
Screw in cold cathode CFL	$12/bulb
T8 to T8	$21/lamp
Delamping	$6/fixture
HVAC MEASURES	
Programmable Thermostats	$204/thermostat
High-Efficiency Packaged AC and Heat Pumps (<65,000 Btuh)	$440 to $1,321 (depending on size and SEER rating)
Shade Screens	$4/sq. ft.
Window Films	$3/sq. ft.
MOTORS	
Variable speed drives	$377/HP
PLUG LOADS	
Beverage Controls ("Vending Miser")	$199/sensor
Snack Controls ("Vending Miser")	$103/sensor
Advanced Power Strips - Load Sensor	$32/strip
Advanced Power Strips - Occupancy Sensors	$90/strip
Advanced Power Strips - Timer Plug Strip	$19/strip
WHOLE BUILDING	
Custom measures	$6,535/customer

Program Delivery Strategy, Incentive Processing, and Administration

The Program is an upstream market incentive program that will utilize contractors to provide turn-key installation services to schools. The Program will be implemented by employing the same implementation contractor that delivers the UNSE Commercial Facilities Efficiency Program. Incentives will be paid directly to contractors and are designed to offset up to 100% of project installation costs. The participation process will be facilitated by an internet-based system that will provide an analysis of project savings, cost and cost savings and automated proposal preparation.

UNSE will assign an in-house program manager to oversee the Program, provide guidance on program activities that is consistent with UNSE's goals and customer service requirements, and provide a contact point for schools that are interested in or have concerns about the Program. The implementation contractor will be responsible for program administration, application and incentive processing, monitoring the activities of the installing contractors, participation tracking and reporting, and overall quality control and management of the delivery process. As part of the implementation plan, the implementation contractor will conduct outreach to contractors, marketing and promotion to schools, and education and training on the benefits and functioning of the program.

The installing contractors will promote the program directly to schools, provide turn-key installation services and have access to the internet processing system to prepare proposals.

Program Marketing and Communications Strategy

The marketing and communications strategy will be designed to inform schools of the availability and benefits of the Program and how they can participate. The strategy will include specific outreach to schools and to contractors who typically do retrofits in schools. An important part of the marketing plan will be content and functionality on the UNSE website, which will direct schools to information about the Program. More specifically, the marketing and communications plan will include:

- Direct outreach to schools within the UNSE service territory;
- Direct outreach to existing trade allies that specifically target schools for the Program;
- Website content at uesaz.com providing Program information resources, contact information, and links to other relevant service and information resources;
- Customer care representatives will be available to answer any questions regarding the Program; and
- Presentations by the Program Manager and Implementation Contractor specifically targeted to schools.

Program Implementation Schedule

The Program will be implemented immediately upon Arizona Corporation Commission approval.

Measurement, Evaluation, and Research

UNSE will adopt a strategy that calls for integrated data collection that is designed to provide a quality data resource for program tracking, management and evaluation. This approach will entail the following primary activities:

- **Database management** - As part of program operation, UNSE will collect the necessary data elements to populate the tracking database and provide periodic reporting.
- **Integrated implementation data collection** - UNSE will work with the Implementation Contractor to establish systems to collect the data needed to support effective program management and evaluation through the implementation and customer application processes. The database tracking system will be integrated with implementation data collection processes.
- **Field verification** - UNSE will conduct field verification of the installation of a sample of measures throughout the implementation of the Program.
- **Tracking of savings using deemed savings values** - UNSE will develop deemed savings values for each measure and technology promoted by the Program and periodically review and revise the savings values to be consistent with program participation and accurately estimated the savings being achieved by the Program.

This approach will provide UNSE with ongoing feedback on program progress and enable program management to adjust or correct the program so as to be more effective, provide a higher level of service, and be more cost beneficial. Integrated data collection will also provide a high quality data resource for evaluation activities.

Quality Assurance and Control

Training on program rules and installation guidelines will be provided to interested contractors. Contractors will be made aware that their work may be inspected pre or post installation and that customer feedback on their performance will be solicited. The implementation contractor will randomly inspect at least 10% of all jobs to verify fixture counts, hours of use and functionality of the installed equipment.

Program Costs and Benefits

The annual budgets for 2011 and 2012 will be allocated as shown in Table 2. The 2011 budget as shown includes additional staff time required for new program start up. Any portion of the budget that is not expensed or reserved by the end of October may be transferred to the regular UNSE Commercial Facilities Efficiency Program.

Table 2. 2011 to 2012 Program Budget

Year	2011	2012
Total Budget	$162,513	$200,042
Incentives	$72,248	$156,411
Administrative Costs	$17,000	$3,003
Incentives as % of Budget	44%	78%

Total annual demand and energy savings goals are presented in Table 3. In addition to the savings shown in Table 3, it is estimated that the Program will produce the additional environmental benefits from 2011-2012, as shown in Table 4.

Table 3. Projected Capacity and Energy Benefits

Annual Incremental Savings	2011	2012
Coincident peak (MW)	0.05	0.12
Energy Savings (MWh)	596	1,291

Table 4. Projected Lifetime Environmental Benefits

Environmental Benefits	2011	2012
SOx (metric tons)	0.01	0.03
NOx (metric tons)	0.39	0.84
CO_2 (metric tons)	2,810	6,085

Table 5 provides program level benefit/cost analysis results. Measure level benefit-cost results assess cost-effectiveness on the basis of incremental costs only, while program level benefit-cost results assess both incremental costs and total program delivery costs. Measure level benefit-cost results are detailed in Appendix B.

Table 5. Benefit-Cost Analysis Results

Societal Cost Test BC Ratio	2011	2012
Total Program	2.5	4.4

Appendix A: 2011 - 2012 Budget detail:

UNSE Schools Program (2011)				
Measure	**New or Existing Measure for 2011**	**Maximum Incentive / Measure**	**Units**	**TOTAL**
Custom Measures	New	$6,535	6	$39,209
14 SEER Packaged and Split Air Conditioners	New	$440		$0
14 SEER Packaged and Split Heat Pumps	New	$440		$0
15 SEER Packaged and Split Air Conditioners	New	$880		$0
15 SEER Packaged and Split Heat Pumps	New	$880		$0
16 SEER Packaged and Split Air Conditioners	New	$1,321		$0
16 SEER Packaged and Split Heat Pumps	New	$1,321		$0
Programmable Thermostats	New	$204	30	$6,133
Shade Screens	New	$4		$0
Window Films	New	$3		$0
Daylighting controls	New	$751		$0
Delamping	New	$6	90	$572
Energy efficient exit signs	New	$55	75	$4,133
Hard Wire CFL	New	$15	60	$902
HIDs to T8/T5	New	$96	45	$4,320
Induction Lighting	New	$196		$0
Integral Screw In CFL	New	$11		$0
LED Channel Signs	New	$13		$0
Occupancy sensors	New	$96	12	$1,152
Outdoor CFL	New	$9	20	$172
Reduced LPD	New	$4,472		$0
Screw in cold cathode CFL	New	$12		$0
T 8 Lighting	New	$55	200	$10,966
T8 to T8	New	$21		$0
Variable Speed Drives	New	$377		$0
Beverage Controls ("Vending Miser")	New	$199	15	$2,985
Snack Controls ("Vending Miser")	New	$103	15	$1,545
Advanced Power Strips - Load Sensor	New	$32	5	$160
Advanced Power Strips - Occupancy Sensors	New	$90		$0
Advanced Power Strips - Timer Plug Strip	New	$19		$0
Occupancy Sensor Vending Machine and Reach-in Cooler Controls	New	$199		$0
Subtotal Financial Incentives				**$72,248**
Program Delivery				
Utility Program Delivery				$45,000
IC Program Delivery				$13,014
Other Direct Costs (Office, Travel, Training Expenses)				$1,991

Subtotal Program Delivery				**$60,005**
Program Marketing				
Program Marketing				$7,009
Subtotal Program Marketing				**$7,009**
Utility Program Administration				
Utility Program Administration				$17,000
Subtotal Utility Program Administration				**$17,000**
Evaluation				
Measurement, Evaluation and Research				$6,250
Subtotal Evaluation				**$6,250**
Total Incentive				**$72,248**
Total Non-Incentive				**$90,265**
TOTAL				**$162,513**
Incentives as % of Total Budget				**44%**

UNSE C&I Schools Program (2012)				
Measure	**New or Existing Measure for 2011**	**Maximum Incentive / Measure**	**Units**	**TOTAL**
Custom Measures	New	$6,535	13	$84,952
14 SEER Packaged and Split Air Conditioners	New	$440		$0
14 SEER Packaged and Split Heat Pumps	New	$440		$0
15 SEER Packaged and Split Air Conditioners	New	$880		$0
15 SEER Packaged and Split Heat Pumps	New	$880		$0
16 SEER Packaged and Split Air Conditioners	New	$1,321		$0
16 SEER Packaged and Split Heat Pumps	New	$1,321		$0
Programmable Thermostats	New	$204	65	$13,289
Shade Screens	New	$4		$0
Window Films	New	$3		$0
Daylighting controls	New	$751		$0
Delamping	New	$6	194	$1,234
Energy efficient exit signs	New	$55	162	$8,926
Hard Wire CFL	New	$15	129	$1,939
HIDs to T8/T5	New	$96	97	$9,312
Induction Lighting	New	$196		$0
Integral Screw In CFL	New	$11		$0
Occupancy sensors	New	$96	26	$2,496
Outdoor CFL	New	$9	43	$369

Reduced LPD	New	$4,472		$0
Screw in cold cathode CFL	New	$12		$0
T 8 Lighting	New	$55	430	$23,577
T8 to T8	New	$21		$0
Variable Speed Drives	New	$377		$0
Beverage Controls ("vending miser")	New	$199	33	$6,567
Snack Controls ("Vending Miser")	New	$103	33	$3,399
Advanced Power Strips - Load Sensor	New	$32	11	$352
Advanced Power Strips - Occupancy Sensors	New	$90		$0
Advanced Power Strips - Timer Plug Strip	New	$19		$0
Subtotal Financial Incentives				**$156,411**
Program Delivery				
Utility Program Delivery				$7,949
IC Program Delivery				$13,404
Other Direct Costs (office, travel, and training expenses)				$2,051
Subtotal Program Delivery				**$23,404**
Program Marketing				
Program Marketing				$9,530
Subtotal Program Marketing				**$9,530**
Utility Program Administration				
Utility Program Administration				$3,003
Subtotal Utility Program Administration				**$3,003**
Evaluation				
Measurement, Evaluation and Research				$7,694
Subtotal Evaluation				**$7,694**
Total Incentive				**$156,411**
Total Non-Incentive				**$43,631**
TOTAL				**$200,042**
Incentives as % of Total Budget				**78%**

Appendix B: Measure Analysis Sheets

UNSE Schools Program measures:

Custom Measures
14 SEER Packaged and Split Air Conditioners
14 SEER Packaged and Split Heat Pumps
15 SEER Packaged and Split Air Conditioners
15 SEER Packaged and Split Heat Pumps
16 SEER Packaged and Split Air Conditioners
16 SEER Packaged and Split Heat Pumps
Programmable Thermostats
Shade Screens
Window Films
Daylighting controls
Delamping
Energy efficient exit signs
Hard Wire CFL
HIDs to T8/T5
Induction Lighting
Integral Screw In CFL
Occupancy sensors
Outdoor CFL
Reduced LPD
Screw in cold cathode CFL
T 8 Lighting
T8 to T8
Variable Speed Drives
Beverage Controls ("Vending Miser")
Snack Controls ("Vending Miser")
Advanced Power Strips - Load Sensor
Advanced Power Strips - Occupancy Sensors
Advanced Power Strips - Timer Plug Strip

Schools - Custom Measures

Incentive Calculations
Custom Measures

PROGRAM DATA	
Measure Life (yrs)**:	10
Program Life (yrs):	5
Demand AC ($/kW):	64.51
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.07
Winter Off-pk Energy AC ($/kWh):	0.06
Program Administrative Costs ($/unit):	0
IRP Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Res Ave	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA**	
Op Hours:	8,760
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	80%

OTHER FACTORS	
Line Loss Energy Factor:	9.5%
Line Loss Demand Factor:	9.5%
Capacity Reserve Factor:	0.0%
Application	RET
Cost Basis:	Full Installed

	DEMAND/ENERGY SAVINGS				INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	% Incent	Societal
Measure Type	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (kW)	OnPeak Energy Savings** (kWh)	OffPeak Energy Savings** (kWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive* ($)	Recommended Incentive* % PV	PV Program Cost ($)	NPV ($)	Incr. Cost** ($)	Cost Savings ($)	Payback w o/Inc. (yrs)	Payback w/Inc. (yrs)	Weighting Factor**		BC Ratio
Per Customer	3.73	2.98	16,337	16,337	17,142	21,684	6,535	38%	6,535	10,607	6,535	3,582	1.8	0.0	100%	100%	3.3
Weighted Average	3.73	2.98	16,337	16,337	17,142	21,684	6,535	38%	6,535	10,607	6,535	3,582	1.8	0.0	100%	100%	3.3

*Incentive based on 2011 UES Program Planning.
**OnPk Off Pk Energy Savings, Operating Data, Weighting Factors, Incremental Costs, and Measure Life based on engineering assumptions based on past program data and program planning.

Schools Program - New HVAC

Incentive Calculations
NonRes Split and Packaged AC SEER-rated
13 SEER Baseline

PROGRAM DATA	
Conservation Life (yrs):	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
IRP Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate Class:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk EFLH:	809
Off-Pk EFLH:	1292
On-Pk Ratio:	38%
Off-Pk Ratio:	62%
Summer Ratio:	78%
Winter Ratio:	22%
Coincidence Factor:	0.89
Equipment pk hr load factor:	1.00

OTHER FACTORS	
Line Loss Demand Factor:	9.5%
Line Loss Energy Factor:	9.5%
Capacity Reserve Factor:	0.0%
Application:	ROB
Cost Basis:	Incremental

	DEMAND/ENERGY SAVINGS									INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Unit Type	Unit Size (Tons)	EE SEER	EE EER *	Base SEER	Base EER	Non-Coin Demand Savings Per Unit (KW)	Coin Demand Savings Per Unit (kWh)	On-pk Savings Per Unit (KWh)	Off-pk Savings Per Unit (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive (Per Unit)** ($)	Recommended Incentive (Per Unit)** %PV	PV Cost Per Unit ($)	NPV ($)	Incr. Cost Per Unit ($)	Cost Savings Per Ton ($)	Payback wo/Inc. (yrs)	Payback w/Inc. (yrs)	Weighting Factor*** (%)	%	BC Ratio
Packaged and Split	2	14	11.6	13	11.0	0.113	0.101	107	170	250	346	364	145%	364	-114	364	31	11.6	0.0	0%	100%	0.95
Air Conditioners	2.5	14	11.6	13	11.0	0.141	0.126	133	213	313	432	383	122%	383	-70	383	39	9.7	0.0	5%	100%	1.13
14 SEER	3	14	11.6	13	11.0	0.169	0.151	160	256	376	519	402	107%	402	-26	402	47	8.5	0.0	15%	100%	1.29
	3.5	14	11.6	13	11.0	0.197	0.176	187	298	438	605	421	96%	421	18	421	55	7.6	0.0	20%	100%	1.44
	4	14	11.6	13	11.0	0.226	0.201	213	341	501	692	439	88%	439	62	439	63	7.0	0.0	25%	100%	1.57
	5	14	11.6	13	11.0	0.282	0.251	267	426	626	865	477	76%	477	149	477	79	6.1	0.0	35%	100%	1.81
Weighted Average						0.227	0.202	215	343	504	696	440	90%	440	64	440	63	7.2	0.0	100%	100%	1.58
Packaged and Split	2	15	11.3	13	11.0	0.058	0.052	199	318	378	522	728	193%	728	-351	728	59	12.4	0.0	0%	100%	0.72
Air Conditioners	2.5	15	11.3	13	11.0	0.072	0.065	249	398	472	652	766	162%	766	-294	766	73	10.4	0.0	5%	100%	0.85
15 SEER	3	15	11.3	13	11.0	0.087	0.077	299	477	567	783	803	142%	803	-237	803	88	9.1	0.0	15%	100%	0.97
	3.5	15	11.3	13	11.0	0.101	0.090	348	557	661	913	841	127%	841	-180	841	103	8.2	0.0	20%	100%	1.09
	4	15	11.3	13	11.0	0.116	0.103	398	636	756	1,043	879	116%	879	-123	879	117	7.5	0.0	25%	100%	1.19
	5	15	11.3	13	11.0	0.145	0.129	498	795	945	1,304	954	101%	954	-9	954	147	6.5	0.0	35%	100%	1.37
Weighted Average						0.117	0.104	401	640	760	1,050	880	119%	880	-120	880	118	7.7	0.0	100%	100%	1.19
Packaged and Split	2	16	11.8	13	11.0	0.148	0.132	280	447	570	788	1,093	192%	1,093	-522	1,093	82	13.2	0.0	0%	100%	0.72
Air Conditioners	2.5	16	11.8	13	11.0	0.185	0.165	350	559	713	985	1,149	161%	1,149	-436	1,149	103	11.1	0.0	5%	100%	0.86
16 SEER	3	16	11.8	13	11.0	0.222	0.198	420	671	856	1,181	1,205	141%	1,205	-350	1,205	124	9.7	0.0	15%	100%	0.98
	3.5	16	11.8	13	11.0	0.259	0.231	490	783	998	1,378	1,262	126%	1,262	-263	1,262	144	8.7	0.0	20%	100%	1.09
	4	16	11.8	13	11.0	0.296	0.264	560	895	1,141	1,575	1,318	116%	1,318	-177	1,318	165	8.0	0.0	25%	100%	1.20
	5	16	11.8	13	11.0	0.370	0.330	700	1,118	1,426	1,969	1,430	100%	1,430	-5	1,430	206	6.9	0.0	35%	100%	1.38
Weighted Average						0.298	0.265	563	900	1,148	1,585	1,321	118%	1,321	-173	1,321	166	8.2	0.0	100%	100%	1.20
Packaged and Split	2	17	11.8	13	11.0	0.148	0.132	351	561	694	958	1,457	210%	1,457	-763	1,457	104	14.1	0.0	0%	100%	0.66
Air Conditioners	2.5	17	11.8	13	11.0	0.185	0.165	439	702	867	1,197	1,532	177%	1,532	-665	1,532	129	11.8	0.0	5%	100%	0.78
17 SEER	3	17	11.8	13	11.0	0.222	0.198	527	842	1,040	1,437	1,607	154%	1,607	-567	1,607	155	10.3	0.0	15%	100%	0.89
	3.5	17	11.8	13	11.0	0.259	0.231	615	982	1,214	1,676	1,682	139%	1,682	-468	1,682	181	9.3	0.0	20%	100%	1.00
	4	17	11.8	13	11.0	0.296	0.264	703	1,123	1,387	1,916	1,757	127%	1,757	-370	1,757	207	8.5	0.0	25%	100%	1.09
	5	17	11.8	13	11.0	0.370	0.330	878	1,404	1,734	2,395	1,907	110%	1,907	-173	1,907	259	7.4	0.0	35%	100%	1.26
Weighted Average						0.298	0.265	707	1,130	1,396	1,928	1,761	130%	1,761	-365	1,761	208	8.7	0.0	100%	100%	1.09
Packaged and Split	2	18	12.8	13	11.0	0.307	0.273	415	663	896	1,238	1,821	203%	1,821	-924	1,821	122	14.9	0.0	0%	100%	0.68
Air Conditioners	2.5	18	12.8	13	11.0	0.384	0.342	518	828	1,121	1,547	1,915	171%	1,915	-794	1,915	153	12.5	0.0	5%	100%	0.81
18 SEER	3	18	12.8	13	11.0	0.460	0.410	622	994	1,345	1,857	2,009	149%	2,009	-664	2,009	183	11.0	0.0	15%	100%	0.92
	3.5	18	12.8	13	11.0	0.537	0.478	726	1,160	1,569	2,166	2,103	134%	2,103	-534	2,103	214	9.8	0.0	20%	100%	1.03
	4	18	12.8	13	11.0	0.614	0.547	830	1,326	1,793	2,476	2,196	123%	2,196	-403	2,196	244	9.0	0.0	25%	100%	1.13
	5	18	12.8	13	11.0	0.767	0.684	1,037	1,657	2,241	3,095	2,384	106%	2,384	-143	2,384	306	7.8	0.0	35%	100%	1.30
Weighted Average						0.617	0.550	835	1,334	1,804	2,491	2,201	126%	2,201	-397	2,201	246	9.2	0.0	100%	100%	1.13

*EE EER value based on Efficient Home Cooling MER Report 2010
**Incentives based on UES 2011 Program Planning.
***Weighting Factors based on engineering assumptions.

Schools - New HVAC

Incentive Calculations
NonRes Split and Packaged HP SEER-rated
13 SEER Baseline

PROGRAM DATA	
Conservation Life (yrs):	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
IRP Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate Class:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk EFLH Cooling:	809
Off-Pk EFLH Cooling:	1292
On-Pk EFLH Heating:	554
Off-Pk EFLH Heating:	885
Summer Ratio:	54%
Winter Ratio:	46%
Coincidence Factor:	0.89
Equipment pk hr load factor:	1.00

OTHER FACTORS	
Line Loss Demand Factor:	9.5%
Line Loss Energy Factor:	9.5%
Capacity Reserve Factor:	0.0%
Application:	ROB, NEW
Cost Basis:	Incremental

		DEMAND/ENERGY SAVINGS										INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Unit Type	Unit Size (Tons)	EE SEER	EE EER*	Base SEER	Base EER	EE HSPF	Base HSPF	Non-Coin Demand Savings Per Unit (KW)	Coin Demand Savings Per Unit (kW)	On-pk Savings Per Unit (KWh)	Off-pk Savings Per Unit (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive (Per Unit)** ($)	%PV	PV Cost Per Unit ($)	NPV ($)	Incr. Cost Per Unit ($)	Cost Savings Per Unit ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*** (%)	(%)	BC Ratio
Packaged and Split	2	14	11.7	13	11.0	8.30	8.00	0.131	0.116	167	266	364	503	364	100%	364	0	364	49	7.4	0.0	0%	100%	1.38
Heat Pump	2.5	14	11.7	13	11.0	8.30	8.00	0.163	0.145	208	333	455	629	383	84%	383	72	383	61	6.2	0.0	5%	100%	1.64
14 SEER	3	14	11.7	13	11.0	8.30	8.00	0.196	0.174	250	400	546	754	402	74%	402	145	402	74	5.5	0.0	15%	100%	1.88
	3.5	14	11.7	13	11.0	8.30	8.00	0.228	0.204	292	466	637	880	421	66%	421	217	421	86	4.9	0.0	20%	100%	2.09
	4	14	11.7	13	11.0	8.30	8.00	0.261	0.233	333	533	728	1,006	439	60%	439	289	439	98	4.5	0.0	25%	100%	2.29
	5	14	11.7	13	11.0	8.30	8.00	0.326	0.291	417	666	911	1,257	477	52%	477	434	477	123	3.9	0.0	35%	100%	2.64
Weighted Average								0.263	0.234	335	536	733	1,012	440	62%	440	293	440	99	4.6	0.0	100%	100%	2.30
Packaged and Split	2	15	11.9	13	11.0	8.70	8.00	0.165	0.147	333	532	671	926	728	109%	728	-57	728	98	7.4	0.0	0%	100%	1.27
Heat Pump	2.5	15	11.9	13	11.0	8.70	8.00	0.206	0.184	416	665	839	1,158	766	91%	766	73	766	123	6.3	0.0	5%	100%	1.51
15 SEER	3	15	11.9	13	11.0	8.70	8.00	0.248	0.221	499	798	1,006	1,390	803	80%	803	203	803	147	5.5	0.0	15%	100%	1.73
	3.5	15	11.9	13	11.0	8.70	8.00	0.289	0.257	582	930	1,174	1,621	841	72%	841	333	841	172	4.9	0.0	20%	100%	1.93
	4	15	11.9	13	11.0	8.70	8.00	0.330	0.294	665	1,063	1,342	1,853	879	65%	879	463	879	196	4.5	0.0	25%	100%	2.11
	5	15	11.9	13	11.0	8.70	8.00	0.413	0.368	832	1,329	1,677	2,316	954	57%	954	724	954	245	3.9	0.0	35%	100%	2.43
Weighted Average								0.332	0.296	670	1,070	1,350	1,865	880	67%	880	470	880	197	4.6	0.0	100%	100%	2.12
Packaged and Split	2	16	11.8	13	11.0	9.00	8.00	0.148	0.132	465	742	888	1,227	1,093	123%	1,093	-204	1,093	137	8.0	0.0	0%	100%	1.12
Heat Pump	2.5	16	11.8	13	11.0	9.00	8.00	0.185	0.165	581	928	1,110	1,533	1,149	103%	1,149	-39	1,149	171	6.7	0.0	5%	100%	1.33
16 SEER	3	16	11.8	13	11.0	9.00	8.00	0.222	0.198	697	1,113	1,332	1,840	1,205	90%	1,205	127	1,205	205	5.9	0.0	15%	100%	1.53
	3.5	16	11.8	13	11.0	9.00	8.00	0.259	0.231	813	1,299	1,554	2,146	1,262	81%	1,262	293	1,262	240	5.3	0.0	20%	100%	1.70
	4	16	11.8	13	11.0	9.00	8.00	0.296	0.264	929	1,485	1,776	2,453	1,318	74%	1,318	459	1,318	274	4.8	0.0	25%	100%	1.86
	5	16	11.8	13	11.0	9.00	8.00	0.370	0.330	1,161	1,856	2,220	3,066	1,430	64%	1,430	790	1,430	342	4.2	0.0	35%	100%	2.14
Weighted Average								0.298	0.265	935	1,494	1,787	2,468	1,321	0.8	1,321	467	1,321	275	4.9	0.0	100%	100%	1.87
Packaged and Split	2	17	11.6	13	11.0	9.30	8.00	0.113	0.101	584	932	1,073	1,482	1,457	136%	1,457	-384	1,457	172	8.5	0.0	0%	100%	1.02
Heat Pump	2.5	17	11.6	13	11.0	9.30	8.00	0.141	0.126	729	1,166	1,341	1,852	1,532	114%	1,532	-191	1,532	215	7.1	0.0	5%	100%	1.21
17 SEER	3	17	11.6	13	11.0	9.30	8.00	0.169	0.151	875	1,399	1,609	2,222	1,607	100%	1,607	2	1,607	258	6.2	0.0	15%	100%	1.38
	3.5	17	11.6	13	11.0	9.30	8.00	0.197	0.176	1,021	1,632	1,877	2,593	1,682	90%	1,682	195	1,682	301	5.6	0.0	20%	100%	1.54
	4	17	11.6	13	11.0	9.30	8.00	0.226	0.201	1,167	1,865	2,146	2,963	1,757	82%	1,757	389	1,757	344	5.1	0.0	25%	100%	1.69
	5	17	11.6	13	11.0	9.30	8.00	0.282	0.251	1,459	2,331	2,682	3,704	1,907	71%	1,907	775	1,907	430	4.4	0.0	35%	100%	1.94
Weighted Average								0.227	0.202	1,174	1,877	2,159	2,982	1,761	0.8	1,761	398	1,761	346	5.2	0.0	100%	100%	1.69
Packaged and Split	2	18	12.1	13	11.0	9.70	8.00	0.198	0.177	706	1,128	1,334	1,842	1,821	136%	1,821	-487	1,821	208	8.8	0.0	0%	100%	1.01
Heat Pump	2.5	18	12.1	13	11.0	9.70	8.00	0.248	0.221	882	1,410	1,668	2,303	1,915	115%	1,915	-247	1,915	260	7.4	0.0	5%	100%	1.20
18 SEER	3	18	12.1	13	11.0	9.70	8.00	0.298	0.265	1,059	1,692	2,001	2,764	2,009	100%	2,009	-7	2,009	312	6.4	0.0	15%	100%	1.38
	3.5	18	12.1	13	11.0	9.70	8.00	0.347	0.309	1,235	1,974	2,335	3,224	2,103	90%	2,103	232	2,103	364	5.8	0.0	20%	100%	1.53
	4	18	12.1	13	11.0	9.70	8.00	0.397	0.354	1,412	2,256	2,668	3,685	2,196	82%	2,196	472	2,196	416	5.3	0.0	25%	100%	1.68
	5	18	12.1	13	11.0	9.70	8.00	0.496	0.442	1,765	2,820	3,335	4,606	2,384	71%	2,384	951	2,384	520	4.6	0.0	35%	100%	1.93
Weighted Average								0.399	0.356	1,421	2,270	2,685	3,708	2,201	0.8	2,201	484	2,201	419	5.4	0.0	100%	100%	1.68

*EE EER value based on Efficient Home Cooling MER Report 2010
**Incentives based on UES 2011 Program Planning.
***Weighting Factor based on engineering assumptions.

Incentive Calculations

Schools Program - New HVAC

Programmable Thermostats (Heating Setback / Cooling Setup)

PROGRAM DATA	
Measure Life (yrs)*:	11
Program Life (yrs):	5
Demand AC ($/kW):	66.44
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.07
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate Class:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA**	
On-Pk Savings Ratio:	0%
Off-Pk Savings Ratio:	100%
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.00

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0%
Application:	RET
Cost Basis:	Full Installed

		DEMAND/ENERGY SAVINGS					INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Unit Type	Bldg Type	Bldg Area (sq.ft.)	Non-Coin. Demand Savings Per Tstat (KW)	Coin. Demand Savings Per Tstat (KW)	On-pk Savings Per Tstat (KWh)	Off-pk Savings Per Tstat (KWh)	IRP PV Benefit Per Tstat ($)	Social PV Benefit Per T stat ($)	Incentive (Per Tstat)*** ($)	%PV	PV Cost Per Tstat ($)	NPV ($)	Incr. Cost Per Tstat ($)	Cost Savings Per Tstat ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor**	(%)	BC Ratio
Prog Therm	Education	374,999	0.00	0.00	0	5,688	2,668	3,438	204	8%	204	2,464	204	645	0.3	0.0	100%	100.0%	16.8
	Weighted Average	374,999	0.00	0.00	0	5,688	2,668	3,438	204	8%	204	2,464	204	645	0.3	0.0	100%	100.0%	16.8
Weighted Average Check		OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*Measure Lifetime based on DEER 2008 evaluations.

**Operating data, weighting factors based on engineering assumptions.

***Incentive based on 2011 Program Planning.

Schools - New HVAC

Incentive Calculations
Window Films

PROGRAM DATA	
Measure Life (yrs)*:	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Administrative Costs ($/kWh)	NA
Discount Rate:	9.02%
Societal Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Pea	0.11
$/kWh, Off-Pea	0.11

OPERATING DATA***	
On-Pk Op. Hours %	70%
Off-Pk Op. Hours %	30%
Summer Ratio:	100%
Winter Ratio:	0%
Coincidence Factor	100%

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

	DEMAND/ENERGY SAVINGS						INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WCT.	%Incent	Societal
Window Film	Emissivity	Shading Coefficient	Non Coin Demand Savings (kW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Societal PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*** (%)	(%)	BC Ratio
Electric Cool/ Heat																			
VS60	0.67	0.52	0.002	0.002	4	2	5	7	3	50%	3	5	3	0.62	4.3	0.0	15%	100%	2.8
VS61	0.67	0.58	0.002	0.002	3	1	5	6	3	58%	3	4	3	0.53	4.9	0.0	15%	100%	2.4
VS70	0.66	0.56	0.002	0.002	3	1	5	7	3	55%	3	4	3	0.56	4.7	0.0	15%	100%	2.5
VS80BL	0.82	0.65	0.001	0.001	3	1	4	5	3	70%	3	3	3	0.44	6.0	0.0	15%	100%	2.0
Electric Cool Only																			
VS60	0.67	0.52	0.002	0.002	4	2	5	7	3	51%	3	5	3	0.60	4.4	0.0	10%	100%	2.7
VS61	0.67	0.58	0.002	0.002	3	1	4	6	3	59%	3	4	3	0.52	5.0	0.0	10%	100%	2.4
VS70	0.66	0.56	0.002	0.002	3	1	5	6	3	56%	3	4	3	0.55	4.8	0.0	10%	100%	2.5
VS80BL	0.82	0.65	0.001	0.001	3	1	4	5	3	71%	3	2	3	0.43	6.1	0.0	10%	100%	1.9
Weighted Average			0.002	0.002	3	1	5	6	3	58%	3	4	3	0.53	5.01	0.00	100%	100%	2.4
Weighted Average Check				OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*Based on average of 3M warranty periods http://solutions.3m.com/wps/portal/3M/en_US/Window_Film/Solutions/Resources/Links/Warranties/
**Incentive based on 2011 UES Program Planning.
***Weighting Factor and Operating Data based on engineering assumptions.

Schools - New Lighting

Incentive Calculations
Daylighting Controls

PROGRAM DATA	
Measure Life (yrs):	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
Discount Rate:	9.02%
Social Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA*	
On-Pk Op. Hours:	1,316
Off-Pk Op. Hours:	1,584
Total Hours:	2,900
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand):	0.20
HVAC Interaction Factor (Energy):	0.17

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
Line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET / NEW
Cost Basis:	Full Installed

	DEMAND/ENERGY SAVINGS						INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Control Type	Connected Load*** (Watts)	Dayl. Savings Fraction****	Non-Coin. Demand Savings Per kW (KW)	Coin. Demand Savings Per kW (KW)	On-pk Savings Per kW (KWh)	Off-pk Savings Per kW (KWh)	IRP PV Benefit Per kW ($)	Social PV Benefit Per kW ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Cost Per kW ($)	NPV ($)	Incr. Cost Per kW ($)	Cost Savings Per kW ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*****	(%	BC Ratio
SIDELIGHTING - ON/OFF	1000	32%	0.384	0.357	493	593	967	1335	775	1	775	191	775	123	6.3	0.0	10%	100%	1.7
SIDELIGHTING - STEP	1000	44%	0.528	0.491	678	815	1329	1836	775	1	775	554	775	169	4.6	0.0	10%	100%	2.4
SIDELIGHTING - CONTINUOU	1000	56%	0.672	0.625	862	1038	1692	2336	1358	1	1358	334	1358	215	6.3	0.0	20%	100%	1.7
SKYLIGHTING - ON/OFF	1000	52%	0.624	0.580	801	964	1571	2169	176	0	176	1395	176	200	0.9	0.0	15%	100%	12.4
SKYLIGHTING - STEP	1000	57%	0.684	0.636	878	1056	1722	2378	176	0	176	1546	176	219	0.8	0.0	15%	100%	13.5
SKYLIGHTING - CONTINUOU	1000	62%	0.744	0.692	955	1149	1873	2586	905	0	905	968	905	239	3.8	0.0	30%	100%	2.9
Weighted Average	1000	54%	0.645	0.600	828	996	1624	2242	751	48%	751	873	751	207	3.7	0.0	100%	100%	3.0

*HVAC interaction factors from "Engineering Methods for Estimating the Impacts of DSM Programs, Volume 2: Fundamental Equations for Residential and Commercial End Uses," EPRI, 1993. This source shows a summer demand IC of 0.40.
**Incentives based on 2011 UES Program Planning.
***Connected load assumes 8 fixtures at 136 watts per fixture
****Daylighting Savings Fractions are sourced from Lawerence Berkely Labs Nomographs
*****Weighting factors based on engineering assumptions.

Weighted Average Check	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Schools - New Lighting

Incentive Calculations
Delamping
Removing lamps with no replacement

PROGRAM DATA	
Measure Life (yrs)*:	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/kWh):	0
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	1,447
Off-Pk Op. Hours:	1,741
Total Op. Hours:	3,187
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand):	1.22
HVAC Interaction Factor (Energy):	1.15

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application:	RET
Cost Basis:	Retrofit

		DEMAND/ENERGY SAVINGS				INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	Wghtd Base Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
Delamping	72	0.161	0.149	121	145	277	383	6.36	2%	6	377	6.36	30	0.2	0.0	100%	100%	60.2

No Delamping took place in 2009 in UNSE service territory. Data replicates TEP MAS analysis, except for avoided costs and rate data.
* Based on DEER 2008 EUL of 70,000 (rate life of ballast)/ annual operating hours by building type or 15, whichever is lower.
**Based on 2011 UES Program Planning.

Schools - New Lighting

Incentive Calculations
Energy-Efficient Exit Signs – Retrofit Applications
Replace Inefficient Exit Signs with LED Exit Signs

PROGRAM DATA	
Measure Life (yrs)*:	16
Program Life (yrs):	5
Demand AC ($/kW):	77.03
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/kWh):	0
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	3,976
Off-Pk Op. Hours:	4,784
Total Op. Hours:	8,760
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand):	1.10
HVAC Interaction Factor (Energy):	1.13

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

			DEMAND/ENERGY SAVINGS				INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	EE Watts	Wghtd Base Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost*** ($)	Cost Savings ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
Weighted Average	5	64	0.124	0.115	265	319	494	693	55	11%	55	638	55.10	66	0.8	0.0	100%	100%	12.6

* Based on DEER 2008.
**Based on 2011 UES Program Planning.
***2010 MER Report

Schools - New Lighting

Incentive Calculations
Integral Screw-In and Hardwire CFLs
Replace Incandescents with CFLs

PROGRAM DATA	
Measure Life (yrs)*:	2
Program Life (yrs):	5
Demand AC ($/kW):	50.92
Summer On-pk Energy AC ($/kWh):	0.06
Summer Off-pk Energy AC ($/kWh):	0.04
Winter On-pk Energy AC ($/kWh):	0.05
Winter Off-pk Energy AC ($/kWh):	0.05
Program Admin Costs ($/kWh):	0
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	778
Off-Pk Op. Hours:	936
Total Op. Hours:	1,714
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand):	1.22
HVAC Interaction Factor (Energy):	1.13

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

			DEMAND/ENERGY SAVINGS				INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	CFL Fixt. Watts	Incand. Fixt. Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%	BC Ratio
Integral Screw In	14	71	0.127	0.118	50	60	22	24	11	48%	11	13	11	13	0.8	0.0	100%	100%	2.3
Hardwire Plug In	16	67	0.115	0.107	45	55	20	22	15	78%	15	6	15	11	1.4	0.0	100%	100%	1.4

* Based on average manufacturer rated life and deemed annual usage hours.
**Based on 2011 UES Program Planning.

Incentive Calculations

ENERGY-EFFICIENT HID FIXTURES

Schools - New Lighting

Replace HID Systems with Linear Fluorescent T8 and T5 Systems

PROGRAM DATA	
Conservation Life (yrs):	18
Program Life (yrs):	5
Demand AC ($/kW):	81.72
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.08
Program Admin Costs ($/unit):	NA
IRP Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	999
Off-Pk Op. Hours:	3,381
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0.0%
Application	RET
Cost Basis:	Full Installed

				DEMAND/ENERGY SAVINGS								INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Base Fixture Type	Base Lamp Type	Base Lamp Watts	Base Fixt. Watts	EE Lamp Type***	EE Fixture Config***	EE Lamp Watts***	EE Fixt. Watts***	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (kW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Reccommended Incentives**** ($)	Reccommended Incentives**** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*	(%)	BC Ratio
HID	MH	150	185	F54T5/HO	2-Lamp	54	117	0.07	0.06	68	230	269	626	83	31%	83	187	83	34	2.4	0.0	0%	100%	7.6
SYSTEMS	MH	250	290	F54T5/HO	3-Lamp	54	179	0.11	0.10	111	375	439	1,021	102	23%	102	337	102	55	1.9	0.0	5%	100%	10.0
	MH	400	458	F54T5/HO	4-Lamp	54	234	0.22	0.21	224	757	887	2,061	109	12%	109	778	109	111	1.0	0.0	35%	100%	18.9
	MH	750	810	F54T5/HO	6-Lamp	54	351	0.46	0.43	459	1,552	1,817	4,223	168	9%	168	1,648	168	228	0.7	0.0	1%	100%	25.1
	MH	1000	1080	2xF54T5/HO	4-Lamp	54	468	0.61	0.57	612	2,069	2,422	5,630	218	9%	218	2,204	218	304	0.7	0.0	2%	100%	25.8
								0.00		0	0													
	MH	150	185	F32T8	2-Lamp	32	72	0.11	0.11	113	382	447	1,040	42	9%	42	405	42	56	0.7	0.0	0%	100%	24.8
	MH	250	290	F32T8	3-Lamp	32	114	0.18	0.16	176	595	697	1,619	57	8%	57	639	57	87	0.7	0.0	5%	100%	28.2
	MH	400	458	F32T8	6-Lamp	32	219	0.24	0.22	239	808	946	2,199	74	8%	74	872	74	119	0.6	0.0	20%	100%	29.7
	MH	750	810	2xF32T8	6-Lamp	32	438	0.37	0.35	372	1,258	1,472	3,422	148	10%	148	1,324	148	185	0.8	0.0	1%	100%	23.1
	MH	1000	1080	2xF32T8	6-Lamp	32	438	0.64	0.60	641	2,170	2,541	5,906	148	6%	148	2,393	148	319	0.5	0.0	1%	100%	39.9
								0.00		0	0													
	HPS	150	190	F54T5/HO	2-Lamp	54	117	0.07	0.07	73	247	289	672	83	29%	83	206	83	36	2.3	0.0	0%	100%	8.1
	HPS	250	295	F54T5/HO	3-Lamp	54	179	0.12	0.11	116	392	459	1,067	102	22%	102	357	102	58	1.8	0.0	5%	100%	10.4
	HPS	400	464	F54T5/HO	4-Lamp	54	234	0.23	0.21	230	778	910	2,116	109	12%	109	801	109	114	1.0	0.0	10%	100%	19.4
								0.00		0	0													
	HPS	150	190	F32T8	2-Lamp	32	72	0.12	0.11	118	399	467	1,086	42	9%	42	425	42	59	0.7	0.0	0%	100%	25.9
	HPS	250	295	F32T8	3-Lamp	32	114	0.18	0.17	181	612	716	1,665	57	8%	57	659	57	90	0.6	0.0	5%	100%	29.0
	HPS	400	464	F32T8	6-Lamp	32	219	0.25	0.23	245	828	970	2,254	74	8%	74	896	74	122	0.6	0.0	10%	100%	30.4
Weighted Average		395	452			45	222	0.23	0.21	230	777	910	2,115	96	11%	96	814	96	114	0.9	0.0	100%	100%	22.0

*Weighting Factors based on engineering assumptions.

** HVAC interaction factors from "Engineering Methods for Estimating the Impacts of DSM Programs, Volume 2: Fundamental Equations for Residential and Commercial End Uses," EPRI, 1993. This source shows a summer demand IC of 0.40.

***See Energy Assumptions tab for more details.

****Incentives based on 2011 UES Program Planning.

Schools - New Lighting

Incentive Calculations
ENERGY-EFFICIENT INDUCTION LIGHTING
Replace HID Systems with Induction Lighting Systems

PROGRAM DATA	
Measure Life (yrs):	18
Program Life (yrs):	5
Demand AC ($/kW):	81.72
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.08
Program Admin Costs ($/unit);	NA
Discount Rate:	9.02%
Social Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA**	
On-Pk Op. Hours:	1,316
Off-Pk Op. Hours:	1,584
Total Hours:	2,900
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand)*:	0.20
HVAC Interaction Factor (Energy)*:	0.17

OTHER FACTORS	
Line Loss Factor (Demand):	9.5%
Line Loss Factor (Energy):	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

DEMAND/ENERGY SAVINGS												INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Base Lamp Type	Base Lamp Watts	Base Fixt. Watts	EE Lamp Type	EE Lamp Watts	EE Fixt. Watts	Delta Lamp Watts	Delta Fixture Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP Benefit ($)	Societal PV Benefit ($)	Recommended Incentive*** ($)	Recommended Incentive*** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
MH - 70W	70	94	Induction - 40 W	40	41	30	53	0.064	0.059	82	98	186	269	153	82%	153	33	153	20	7.5	0.0	6%	100%	1.8
MH - 100W	100	126	QL - 55W	55	56	45	70	0.084	0.078	108	129	244	353	146	60%	146	98	146	27	5.4	0.0	6%	100%	2.4
MH - 100W	100	126	ICETRON - 70W	70	71	30	55	0.065	0.061	84	101	190	276	146	77%	146	45	146	21	7.0	0.0	6%	100%	1.9
MH - 100W	100	126	QL - 85W	85	87	15	39	0.047	0.044	60	73	137	198	146	107%	146	-9	146	15	9.7	0.0	6%	100%	1.4
MH - 150W	150	185	QL - 55W	55	56	95	129	0.155	0.144	198	239	450	652	151	34%	151	299	151	50	3.1	0.0	6%	100%	4.3
MH - 150W	150	185	ICETRON - 70W	70	71	80	114	0.136	0.127	175	210	397	574	152	38%	152	245	152	44	3.5	0.0	6%	100%	3.8
MH - 150W	150	185	QL - 85W	85	87	65	98	0.118	0.110	151	182	343	497	152	44%	152	191	152	38	4.0	0.0	6%	100%	3.3
MH - 150W	150	185	ICETRON - 100W	100	102	50	83	0.099	0.092	128	154	290	419	159	55%	159	130	159	32	5.0	0.0	6%	100%	2.6
MH - 175W	175	210	QL - 85W	85	87	90	123	0.148	0.137	190	228	430	623	156	36%	156	275	156	47	3.3	0.0	6%	100%	4.0
MH - 175W	175	210	ICETRON - 100W	100	102	75	108	0.129	0.120	166	200	377	546	164	43%	164	213	164	42	3.9	0.0	6%	100%	3.3
MH - 250W	250	295	ICETRON - 150W	150	153	100	142	0.170	0.158	218	263	496	717	200	40%	200	296	200	55	3.7	0.0	6%	100%	3.6
MH - 250W	250	295	QL - 165W	165	169	85	126	0.152	0.141	195	234	442	640	208	47%	208	234	208	49	4.3	0.0	6%	100%	3.1
HPS - 150W	150	188	QL - 55W	55	56	95	132	0.158	0.147	203	244	461	667	253	55%	253	207	253	51	5.0	0.0	6%	100%	2.6
HPS - 150W	150	188	ICETRON - 70W	70	71	80	117	0.140	0.130	179	216	407	589	254	62%	254	154	254	45	5.7	0.0	6%	100%	2.3
HPS - 250W	250	295	QL - 85W	85	87	165	208	0.250	0.232	321	386	728	1,053	249	34%	249	479	249	80	3.1	0.0	6%	100%	4.2
HPS - 250W	250	295	ICETRON - 100W	100	102	150	193	0.231	0.215	297	357	674	976	257	38%	257	417	257	74	3.5	0.0	6%	100%	3.8
HPS - 400W	400	463	ICETRON - 150W	150	153	250	310	0.372	0.346	477	574	1,083	1,567	288	27%	288	795	288	119	2.4	0.0	6%	100%	5.4
HPS - 400W	400	463	QL - 165W	165	169	235	294	0.353	0.329	454	546	1,029	1,490	296	29%	296	733	296	113	2.6	0.0	6%	100%	5.0
Weighted Average								0.160	0.148	205	246	465	673	196	50%	196	269	196	51	4.6	0.0	100%	100%	3.4
Weighted Average Check								OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*HVAC interaction factors from "Engineering Methods for Estimating the Impacts of DSM Programs, Volume 2: Fundamental Equations for Residential and Commercial End Uses," EPRI, 1993. This source shows a summer demand IC of 0.40.
**Operation hours are based on HID swap outs for interior applications such as warehouses, showrooms, and corridors. However, induction lighting is found in outdoor applications such as tunnels, parking lots, street lights, which affect operation hours. This is still being researched.
***Incentive based on 2011 UES Program Planning.

Schools - New Lighting

Incentive Calculations
Occupancy Sensors
Install Occupancy Sensors on Lighting and Outdoor Fixtures

PROGRAM DATA	
Measure Life (yrs):	12
Program Life (yrs):	5
Demand AC ($/kW):	68.44
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	1,316
Off-Pk Op. Hours:	1,584
Total Op. Hours:	2,900
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand)*:	0.20
HVAC Interaction Factor (Energy)*:	0.17

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
Line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET / NEW
Cost Basis:	Full Installed

	DEMAND/ENERGY SAVINGS									INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Space Type	Coverage Floor Area (SF)** per sensor	Lighting Power Density (Watts/SF)	Connected Load (Watts) per sensor	Energy Savings Factor	Demand Savings Factor	Non-Coin. Demand Savings Per Snsr (KW)	Coin. Demand Savings Per Snsr (KW)	On-pk Savings Per Snsr (KWh)	Off-pk Savings Per Snsr (KWh)	IRP PV Benefit Per Snsr ($)	Social PV Benefit Per Snsr ($)	Recommended Incentive (Per Snsr)*** ($)	Recommended Incentive (Per Snsr)*** %PV	PV Costs Per Snsr ($)	NPV ($)	Incr. Cost Per Snsr ($)	Cost Savings Per Snsr ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor**	(%)	BC Ratio
Office (Open Plan)	300	1.3	390	26%	10%	0.05	0.04	154	185	214	280	96	45%	96	117	96	38	2.5	0.0	11%	100%	2.9
Office (Executive / Private)	150	1.5	225	31%	12%	0.03	0.03	107	129	149	195	96	65%	96	52	96	27	3.6	0.0	6%	100%	2.0
Corridor	200	0.7	140	39%	16%	0.03	0.02	84	101	117	153	96	83%	96	20	96	21	4.6	0.0	11%	100%	1.6
Classroom	500	1.6	800	32%	13%	0.12	0.12	398	479	553	726	96	17%	96	457	96	100	1.0	0.0	11%	100%	7.5
Restrooms	120	1.0	120	46%	18%	0.03	0.02	84	102	117	154	96	82%	96	21	96	21	4.6	0.0	11%	100%	1.6
Conference Room	300	1.5	450	37%	15%	0.08	0.07	257	309	357	468	96	27%	96	260	96	64	1.5	0.0	6%	100%	4.9
Warehouse	625	1.4	844	50%	20%	0.20	0.19	650	782	902	1184	96	11%	96	806	96	162	0.6	0.0	11%	100%	12.3
Mech / Elec Room	150	1.3	195	39%	16%	0.04	0.03	118	142	163	214	96	59%	96	67	96	29	3.3	0.0	11%	100%	2.2
Storage	150	1.1	165	48%	19%	0.04	0.03	121	145	168	220	96	58%	96	71	96	30	3.2	0.0	11%	100%	2.3
Copy Room	100	1.5	150	40%	16%	0.03	0.03	93	112	130	170	96	74%	96	33	96	23	4.1	0.0	11%	100%	1.8
Weighted Average	263	1.3	349	39%	16%	0.07	0.06	209	252	291	381	96	53%	96	194	96	52	3	0	100%	100%	4.0

*HVAC interaction factors from "Engineering Methods for Estimating the Impacts of DSM Programs, Volume 2: Fundamental Equations for Residential and Commercial End Uses," EPRI, 1993. This source shows a summer demand IC of 0.40.

**Coverage floor area, Weighting Factors from engineering judgment.

***Incentives based on UES 2011 Program Planning.

Schools - New Lighting

Incentive Calculations
High Efficiency Outdoor Lighting

PROGRAM DATA	
Measure Life (yrs):	5
Program Life (yrs):	5
Demand AC ($/kW):	55.65
Summer On-pk Energy AC ($/kWh):	0.07
Summer Off-pk Energy AC ($/kWh):	0.05
Winter On-pk Energy AC ($/kWh):	0.06
Winter Off-pk Energy AC ($/kWh):	0.05
Program Admin Cost ($/unit):	NA
Discount Rate:	9.02%
Social Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	999
Off-Pk Op. Hours:	3381
Total Hours:	4380
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.02

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
Line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

		DEMAND/ENERGY SAVINGS						INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
EE Measure Type	Base Measure Type	Base Fixture Watts	EE Fixture Watts	Non-Coin. Demand Savings (KW)	Coin. Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*	(%)	BC Ratio
CFL (screw-in, spiral)	Incandescent	40	9	0.031	0.001	31	105	31	36	6.56	21%	7	25	6.56	15	0.4	0.0	5%	100%	5.5
CFL (screw-in, spiral)	Incandescent	60	13	0.047	0.001	47	159	48	54	6.56	14%	7	41	6.56	23	0.3	0.0	11%	100%	8.3
CFL (screw-in, spiral)	Incandescent	75	18	0.057	0.001	57	193	58	66	6.56	11%	7	51	6.56	28	0.2	0.0	21%	100%	10.1
CFL (screw-in, spiral)	Incandescent	100	23	0.077	0.001	77	260	78	89	6.56	8%	7	71	6.56	38	0.2	0.0	32%	100%	13.6
CFL (screw-in, spiral)	Incandescent	150	32	0.118	0.002	118	399	119	137	7.89	7%	8	111	7.89	59	0.1	0.0	21%	100%	17.3
CFL (screw-in, spiral)	Incandescent	250	55	0.195	0.003	195	659	197	226	24.78	13%	25	172	24.78	97	0.3	0.0	10%	100%	9.1
	Weighted Average			0.087	0.001	87	295	88	101	8.59	10%	9	80	8.59	43	0.2	0.0	100%	100%	11.7
Weighted Average Check				OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*Weighting Factor based on engineering assumptions.
**Incentive based on 2011 UES Program Planning.

Schools - New Lighting

Incentive Calculations
REDUCED LIGHTING POWER DENSITY

PROGRAM DATA	
Measure Life (yrs):	12
Program Life (yrs):	5
Demand AC ($/kW):	68.44
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Cost ($/unit):	NA
Discount Rate:	9.02%
Societal Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

INCENTIVE LEVEL	
$ / kW reduced:	350

OPERATING DATA		Garage***
On-Pk Op. Hours: (Short / Long)	1,316	4380
Off-Pk Op. Hours: (Short / Long)	1,584	4380
Total Hours:	2,900	8760
Summer Ratio:	50%	
Winter Ratio:	50%	
Coincidence Factor:	0.93	
HVAC Interaction Factor (Demand) *****:	0.20	
HVAC Interaction Factor (Energy) *****:	0.17	

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy	9.5%
Capacity Reserve Factor:	0%
Application	NEW
Cost Basis:	Incremental

	DEMAND/ENERGY SAVINGS								INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Building Type	Floor Area Sq.Ft.*	Baseline LPD** (Watts/SF)	EE LPD (Watts/SF)	LPD Savings Factor	Non-Coin. Demand Savings (KW)	Coin. Demand Savings (KW)	On-pk Savings (KWh)	Off-pk Savings (KWh)	IRP PV Benefit ($)	Societal PV Benefit ($)	Recommended Incentive**** ($)	Recommended Incentive**** %PV	PV Costs Per Prjct ($)	NPV ($)	Incr. Cost Per Prjct ($)	Cost Savings Per Prjct ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor*****		BC Ratio
Automotive	6,500	0.9	0.8	10%	0.7	0.7	1,081	1,301	1,683	2,208	880	52%	880	804	880	270	3.3	0.0	0%	100%	2.5
Convention Center	21,900	1.2	1.1	10%	3.2	2.9	4,857	5,843	7,562	9,920	2,964	39%	2,964	4,598	2,964	1,214	2.4	0.0	0%	100%	3.3
Court House	15,500	1.2	1.1	10%	2.2	2.1	3,437	4,136	5,352	7,021	2,098	39%	2,098	3,254	2,098	859	2.4	0.0	0%	100%	3.3
Dining: Bar Lounge/Leisure	5,600	1.3	1.2	10%	0.9	0.8	1,345	1,619	2,095	2,748	758	36%	758	1,337	758	336	2.3	0.0	12%	100%	3.6
Dining: Cafeteria/Fast Food	5,600	1.4	1.3	10%	0.9	0.9	1,449	1,743	2,256	2,959	758	34%	758	1,498	758	362	2.1	0.0	9%	100%	3.9
Dining: Family	5,600	1.6	1.4	10%	1.1	1.0	1,656	1,992	2,578	3,382	758	29%	758	1,820	758	414	1.8	0.0	1%	100%	4.5
Dormitory	35,800	1	0.9	10%	4.3	4.0	6,616	7,960	10,301	13,514	4,845	47%	4,845	5,456	4,845	1,653	2.9	0.0	1%	100%	2.8
Exercise Center	14,200	1	0.9	10%	1.7	1.6	2,624	3,157	4,086	5,360	1,922	47%	1,922	2,164	1,922	656	2.9	0.0	0%	100%	2.8
Gymnasium	14,200	1.1	1.0	10%	1.9	1.7	2,887	3,473	4,494	5,896	1,922	43%	1,922	2,573	1,922	721	2.7	0.0	0%	100%	3.1
Health Care-Clinic	10,400	1	0.9	10%	1.2	1.2	1,922	2,312	2,992	3,926	1,407	47%	1,407	1,585	1,407	480	2.9	0.0	2%	100%	2.8
Hospital	241,400	1.2	1.1	10%	34.8	32.3	53,536	64,411	83,349	109,350	32,669	39%	32,669	50,681	32,669	13,376	2.4	0.0	9%	100%	3.3
Hotel	35,800	1	0.9	10%	4.3	4.0	6,616	7,960	10,301	13,514	4,845	47%	4,845	5,456	4,845	1,653	2.9	0.0	2%	100%	2.8
Library	14,200	1.3	1.2	10%	2.2	2.1	3,412	4,105	5,311	6,968	1,922	36%	1,922	3,390	1,922	852	2.3	0.0	0%	100%	3.6
Manufacturing Facility	21,900	1.3	1.2	10%	3.4	3.2	5,262	6,330	8,192	10,747	2,964	36%	2,964	5,228	2,964	1,315	2.3	0.0	0%	100%	3.6
Motel	35,800	1	0.9	10%	4.3	4.0	6,616	7,960	10,301	13,514	4,845	47%	4,845	5,456	4,845	1,653	2.9	0.0	3%	100%	2.8
Motion Picture Theater	14,200	1.2	1.1	10%	2.0	1.9	3,149	3,789	4,903	6,432	1,922	39%	1,922	2,981	1,922	787	2.4	0.0	0%	100%	3.3
Museum	14,200	1.1	1.0	10%	1.9	1.7	2,887	3,473	4,494	5,896	1,922	43%	1,922	2,573	1,922	721	2.7	0.0	0%	100%	3.1
Office	14,800	1	0.9	10%	1.8	1.7	2,735	3,291	4,258	5,587	2,003	47%	2,003	2,256	2,003	683	2.9	0.0	27%	100%	2.8
Parking Garage***	21,900	0.3	0.3	10%	0.7	0.6	2,878	2,878	3,581	4,698	773	22%	773	2,808	773	653	1.2	0.0	1%	100%	6.1
Performing Arts Theater	14,200	1.6	1.4	10%	2.7	2.5	4,199	5,052	6,537	8,577	1,922	29%	1,922	4,616	1,922	1,049	1.8	0.0	1%	100%	4.5
Police/Fire Station	15,500	1	0.9	10%	1.9	1.7	2,865	3,446	4,460	5,851	2,098	47%	2,098	2,362	2,098	716	2.9	0.0	0%	100%	2.8
Post Office	14,200	1.1	1.0	10%	1.9	1.7	2,887	3,473	4,494	5,896	1,922	43%	1,922	2,573	1,922	721	2.7	0.0	0%	100%	3.1
Religious Building	10,100	1.3	1.2	10%	1.6	1.5	2,427	2,919	3,778	4,956	1,367	36%	1,367	2,411	1,367	606	2.3	0.0	1%	100%	3.6
Retail (Other Than Mall)	9,700	1.4	1.3	10%	1.6	1.5	2,510	3,020	3,907	5,126	1,313	34%	1,313	2,595	1,313	627	2.1	0.0	29%	100%	3.9
Sports Arena	185,440	1.1	1.0	10%	24.5	22.8	37,698	45,356	58,692	77,001	25,096	43%	25,096	33,596	25,096	9,419	2.7	0.0	0%	100%	3.1
Town Hall	15,500	1.1	1.0	10%	2.0	1.9	3,151	3,791	4,906	6,436	2,098	43%	2,098	2,808	2,098	787	2.7	0.0	0%	100%	3.1
Transportation	21,900	1	0.9	10%	2.6	2.4	4,047	4,869	6,301	8,267	2,964	47%	2,964	3,338	2,964	1,011	2.9	0.0	0%	100%	2.8
Warehouse	16,900	0.8	0.7	10%	1.6	1.5	2,499	3,006	3,890	5,104	2,287	59%	2,287	1,603	2,287	624	3.7	0.0	1%	100%	2.2
Workshop	6,500	1.4	1.3	10%	1.1	1.0	1,682	2,023	2,618	3,435	880	34%	880	1,739	880	420	2.1	0.0	0%	100%	3.9
Weighted Average	33,223	1.2	1.1	10%	4.7	4.4	7,249	8,716	11,277	14,795	4,472	39%	4,472	6,804	4,472	1,811	2.4	0.0	100%	100%	3.3

* 2003 CBECS Detailed Tables, released June 2006, BECS Table B1. Summary Table: Total and Means of Floorspace, Number of Workers, and Hours of Operation for Non-Mall Buildings, 2003

**ANSI / ASHRAE / IESNA Standard 90.1-2004, Table 9.5.1 Lighting Power Densities Using the Building Area Method

***Incremental costs for parking garages include ratio for lower power densities and fixture count; Parking garages do not include interactive demand or energy effects.

****Incentives based on 2011 UES Program Planning.

*****HVAC Interaction Factors and Weighting Factors based on engineering assumptions.

Weighted Average Check	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Incentive Calculations

Schools - New Lighting

ENERGY-EFFICIENT COLD CATHODE FLUORESCENT LIGHTING (CC CFL)

PROGRAM DATA	
Measure Life (yrs):	6
Program Life (yrs):	5
Demand AC ($/kW):	57.31
Summer On-pk Energy AC ($/kWh)	0.07
Summer Off-pk Energy AC ($/kWh)	0.05
Winter On-pk Energy AC ($/kWh):	0.06
Winter Off-pk Energy AC ($/kWh):	0.06
Program Admin Costs ($/unit):	NA
Discount Rate:	9.02%
Societal Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	999
Off-Pk Op. Hours:	3,381
Total Hours	4,380
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.02

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full

	DEMAND/ENERGY SAVINGS						INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Fixture Type	Inc. Fixture Watts	Cold Cathode Fixture Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback wo/Inc. (yrs)	Payback w/Inc. (yrs)	Weighting Factor*		BC Ratio
SCREW-IN	25	3	0.022	0.000	22	74	27	31	12.46	46%	12	14	12	11	1.1	0.0	10%	100%	2.5
	30	5	0.025	0.000	25	85	31	36	11.01	36%	11	20	11	12	0.9	0.0	2%	100%	3.2
	40	5	0.035	0.001	35	118	43	50	11.01	26%	11	32	11	17	0.6	0.0	30%	100%	4.5
	45	8	0.037	0.001	37	125	45	53	13.15	29%	13	32	13	18	0.7	0.0	2%	100%	4.0
	50	8	0.042	0.001	42	142	51	60	13.15	26%	13	38	13	21	0.6	0.0	2%	100%	4.6
	54	8	0.046	0.001	46	156	56	66	13.15	23%	13	43	13	23	0.6	0.0	2%	100%	5.0
	60	8	0.052	0.001	52	176	64	74	13.15	21%	13	50	13	26	0.5	0.0	40%	100%	5.7
	65	8	0.057	0.001	57	193	70	82	13.15	19%	13	57	13	28	0.5	0.0	2%	100%	6.2
	75	8	0.067	0.001	67	227	82	96	13.15	16%	13	69	13	33	0.4	0.0	10%	100%	7.3
Weighted Average			0.044	0.001	44	150	54	63	12.40	25%	12	42	12	22	0.61	0.00	100%	100%	5.1
Weighted Average Check			OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*Weighting Factor based on engineering assumption. Measure Life based on lifetime assumption of 25000 hours.

**Incentive based on UES 2011 Program Planning.

Schools - New Lighting

Incentive Calculations
Energy-Efficient Fluorescent Fixtures – Retrofit Applications
Replace T12 Systems and Magnetic Ballasts with T8 Systems and Electronic Ballasts

PROGRAM DATA	
Measure Life (yrs)*:	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/kWh):	0
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	1,320
Off-Pk Op. Hours:	1,405
Total Op. Hours:	2,725
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.95
HVAC Interaction Factor (Demand):	1.07
HVAC Interaction Factor (Energy):	1.11

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

				DEMAND/ENERGY SAVINGS							INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	Length (ft)	# of Lamps in Fixture	Ballast Type	Base Fixt. Watts	EE Lamp Watts	EE Fixt. Watts	Non-Coincident Demand Savings (kW)	Coincident Demand Savings (kW)	On-pk Energy Savings (kWh)	Off-pk Energy Savings (kWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive*** ($)	Recommended Incentive*** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost** ($)	Cost Savings ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor		BC Ratio
Standard T8s	2	2	High Power	48	17	35	0.026	0.025	18	20	42	58	46.75	111%	47	11	46.75	4	10.8	0.0	0.03%	100%	1.2
	4	1	Standard	48	32	34	0.030	0.028	21	22	48	67	37.78	78%	38	29	37.78	5	7.6	0.0	1.72%	100%	1.8
			High Power	48	32	39	0.019	0.018	13	14	30	41	38.81	129%	39	3	38.81	3	12.6	0.0	0.21%	100%	1.1
		2	Standard	84	32	63	0.042	0.040	30	31	68	93	41.27	61%	41	52	41.27	7	6.0	0.0	27.27%	100%	2.3
			High Power	84	32	79	0.010	0.010	7	8	16	23	42.89	260%	43	-20	42.89	2	25.4	0.0	6.42%	100%	0.5
		3	Low Power	103	32	84	0.039	0.037	28	30	63	88	62.44	98%	62	25	62.44	7	9.6	0.0	63.62%	100%	1.4
		4	Standard	144	32	124	0.040	0.039	29	31	66	91	47.91	73%	48	43	47.91	7	7.1	0.0	0.73%	100%	1.9
Weighted Average				96	32	77	0	0	27	29	61	85	54.83	98%	55	30	54.83	6	9.6	0.0	100%	100%	1.5

* Measure life based on DEER 2008 EUL data

** Incremental cost is total cost for a new T8 under the assumption that customers do not buy new T12 fixtures/lamps

*** Incentive based on 2011 UES Program Planning.

Schools - New Lighting

Incentive Calculations
Energy-Efficient Fluorescent Fixtures
Replace Standard T8 Systems with Premium T8 Systems

PROGRAM DATA	
Measure Life (yrs)*:	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/kWh, saved)	NA
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	1,320
Off-Pk Op. Hours:	1,405
Total Op. Hours:	2,725
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.93
HVAC Interaction Factor (Demand):	1.07
HVAC Interaction Factor (Energy):	1.11

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

			DEMAND/ENERGY SAVINGS										INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	Length	# of Lamps in Fixture	Base Lamp Type	Base Lamp Watts	Base Fixt. Watts	EE Lamp Type	EE Lamp Watts	EE Fixt. Watts	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive*** ($)	Recommended Incentive*** %PV	PV Program Cost ($)	NPV ($)	Incr. Cost** ($)	Cost Savings ($)	Payback wo/Inc. (yrs)	Payback w/Inc. (yrs)	Weighting Factor		BC Ratio
Std T8 to Prem T8	4-foot	4	F32T8	32	109.5	F32T8 / ES	27	85	0.052	0.048	37	39	83	115	62	75%	62	53	61.93	9	7.2	0.0	33%	100%	1.8
		3	F32T8	32	83.5	F32T8 / ES	27	64	0.041	0.038	29	31	66	91	62	95%	62	28	62.05	7	9.2	0.0	33%	100%	1.5
		2	F32T8	32	56.5	F32T8 / ES	27	42	0.029	0.027	21	22	47	65	52	109%	52	14	51.58	5	10.5	0.0	33%	100%	1.3
		1	F32T8	32	30	F32T8 / ES	27	23	0.014	0.013	10	11	23	32	47	202%	47	-15	46.89	2	19.5	0.0	0%	100%	0.7
Weighted Average				32	83		27	64	0.041	0.038	29	31	65	90	59	93%	59	32	58.52	7	9.0	0.0	100%	100%	1.5
Per Lamp	4-foot	4	F32T8	32	27.4	F32T8 / ES	27	21	0.013	0.012	9	10	21	29	15	75%	15	13	15.48	2	7.2	0.0	33%	100%	1.8
		3	F32T8	32	27.8	F32T8 / ES	27	21	0.014	0.013	10	10	22	30	21	95%	21	9	20.68	2	9.2	0.0	33%	100%	1.5
		2	F32T8	32	28.3	F32T8 / ES	27	21	0.015	0.014	10	11	24	33	26	109%	26	7	25.79	2	10.5	0.0	33%	100%	1.3
		1	F32T8	32	30.0	F32T8 / ES	27	23	0.014	0.013	10	11	23	32	47	202%	47	-15	46.89	2	19.5	0.0	0%	100%	0.7
Weighted Average				32	28		27	21	0.014	0.013	10	10	22	30	21	93%	21	10	20.65	2	9.0	0.0	100%	100%	1.5

*Measure life based on DEER 2008 EUL data.
** Incremental cost is total cost for a new T8 under the assumption that customers do not buy new T12 fixtures/lamps
***Incentive based on 2011 UES Program Planning.
Since no installation data available for UNSE territory, adapted this MAS from APS incremental costs to UNSE avoided costs and Standard T8 operating data.
Definition of a Premium T8 as a 28W or 25W 4' lamp is based on the Consortium for Energy Efficiency's definition for Reduced Wattage T8 Systems.
Based on EE Fixture Watts, 4-foot Premium T8s use an average of 78% of the wattage of 4-foot Regular T8s. Assumed that the same is true for 3-foot and 2-foot Premium T8s.

Weighted Average Check			OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

Schools - Existing Motors

Incentive Calculations
VSD's Installed on ODP Motors
1800 RPM

PROGRAM DATA	
Conservation Life (yrs):	15
Program Life (yrs):	5
Demand AC ($/kW):	74.78
Summer On-pk Energy AC ($/kWh):	0.09
Summer Off-pk Energy AC ($/kWh):	0.07
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
IRP Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

SAVINGS FACTOR ASSUMPTIONS	
VFD Efficiency:	95%
Peak Flow Ratio (Den	0.95
Avg Flow Ratio (Energ	0.55

OPERATING DATA	
On-Pk Op. Hours:	2440
Off-Pk Op. Hours:	2643
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	0.95
Load Factor:	0.68
Demand Savings Factor:	0.0%
Energy Savings Factor:	76.9%

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
Line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0.0%
Application	RET / NEW
Cost Basis:	Full Installed

						INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Inc.	Societal
Motor HP	Motor Eff.	Non Coin Demand Savings Per HP (KW)	Coin Demand Savings Per HP (kW)	On-pk Savings Per HP (KWh)	Off-pk Savings Per HP (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive (Per HP)* ($)	Recommended Incentive (Per HP)* %PV	PV Cost Per HP ($)	NPV ($)	Incr. Cost Per HP ($)	Cost Savings Per HP ($)	Payback wo/ Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor	(%)	BC Ratio
1	80.4%	0.00	0.00	1,188	1,287	1,676	2,744	1,051	62.71%	1,051	625	1,051	281	3.7	0.0	11.7%	100%	2.6
1.5	84.8%	0.00	0.00	1,126	1,220	1,588	2,601	715	45.02%	715	873	715	266	2.7	0.0	11.7%	100%	3.6
2	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	545	34.69%	545	1,027	545	263	2.1	0.0	11.7%	100%	4.7
3	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	374	23.82%	374	1,198	374	263	1.4	0.0	11.7%	100%	6.9
5	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	235	14.95%	235	1,337	235	263	0.9	0.0	11.7%	100%	11.0
7.5	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	164	10.41%	164	1,409	164	263	0.6	0.0	6.6%	100%	15.7
10	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	127	8.10%	127	1,445	127	263	0.5	0.0	6.6%	100%	20.2
15	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	90	5.74%	90	1,482	90	263	0.3	0.0	6.6%	100%	28.6
20	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	71	4.52%	71	1,501	71	263	0.3	0.0	6.6%	100%	36.2
25	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	59	3.77%	59	1,513	59	263	0.2	0.0	2.3%	100%	43.4
30	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	51	3.26%	51	1,521	51	263	0.2	0.0	2.3%	100%	50.2
40	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	41	2.60%	41	1,531	41	263	0.2	0.0	2.3%	100%	62.9
50	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	35	2.20%	35	1,538	35	263	0.1	0.0	2.3%	100%	74.6
60	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	30	1.92%	30	1,542	30	263	0.1	0.0	1.0%	100%	85.5
75	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	26	1.63%	26	1,547	26	263	0.1	0.0	1.0%	100%	100.7
100	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	21	1.33%	21	1,551	21	263	0.1	0.0	1.0%	100%	123.6
125	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	18	1.14%	18	1,554	18	263	0.1	0.0	0.6%	100%	144.0
150	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	16	1.01%	16	1,556	16	263	0.1	0.0	0.6%	100%	162.8
200	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	13	0.83%	13	1,559	13	263	0.0	0.0	0.6%	100%	197.2
300	85.7%	0.00	0.00	1,115	1,207	1,572	2,575	10	0.64%	10	1,562	10	263	0.0	0.0	0.7%	100%	254.8
501-1000	92.3%	0.00	0.00	1,034	1,121	1,459	2,390	10	0.69%	10	1,449	10	244	0.0	0.0	0.2%	100%	236.5
1000+	92.3%	0.00	0.00	1,034	1,121	1,459	2,390	10	0.69%	10	1,449	10	244	0.0	0.0	0.1%	100%	236.5
Weighted Average		0	0	1,121	1,214	1,581	2,589	377	0	377	1,204	377	265	1	0.00	100%	100%	6.9

*Based on 2011 UES Program Planning.

Incentive Calculations

Schools - New Refrigerators

Occupancy Sensor Vending Machine and Reach-in Cooler Controls

PROGRAM DATA	
Measure Life (yrs):	12
Program Life (yrs):	5
Demand AC ($/kW):	68.44
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/unit):	NA
Discount Rate:	9.02%
Social Discount Rate:	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours Fraction:	24%
Off-Pk Op. Hours Fraction:	76%
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	100%
Demand Load Factor**:	0.60

OTHER FACTORS	
Line Loss Factor-Demand:	9.5%
Line Loss Factor-Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET, NEW
Cost Basis:	Installed

		DEMAND/ENERGY SAVINGS							INCENTIVE CALCULATIONS						CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Description	Type	Base Annual kWh	Demand Savings Fraction*	Energy Savings Fraction*	Non-Coin. Demand Savings Per Unit (KW)	Coin. Demand Savings Per Unit (KW)	On-pk Savings Per Unit (KWh)	Off-pk Savings Per Unit (KWh)	IRP PV Benefit Per Unit ($)	Social PV Benefit Per Unit ($)	Recommended Incentive (Per Unit)*** ($)	Recommended Incentive (Per Unit)*** %PV	PV Cost Per Unit ($)	NPV ($)	Incr. Cost Per Unit ($)	Cost Savings Per Unit ($)	Payback w/o Inc. (yrs)	Payback w/ Inc. (yrs)	Weighting Factor**	(%)	BC Ratio
Reach-in Cooler Controls	CoolerMiser	4,000	15%	30%	0.11	0.11	293	907	702	922	199	28%	199	503	199	136	1.5	0.0	33%	100%	4.6
Beverage Case Controls	VendMiser	3,500	23%	46%	0.15	0.15	393	1,217	942	1,236	199	21%	199	743	199	183	1.1	0.0	33%	100%	6.2
Snack Machine Controls	SnackMiser	700	23%	46%	0.03	0.03	79	243	188	247	103	54%	103	86	103	37	2.8	0.0	33%	100%	2.4
Weighted Average		2,733	20%	41%	0.10	0.10	255	789	611	802	167	35%	167	444	167	118	1.8	0.0	100%	100%	4.8
Weighted Average Check			OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK

*Personal correspondence with USA technologies/ verifiable through "Evaluation of the LiteVend Program" Ecos 2004: http://calmac.org/publications/Final_Report_063004.pdf

**Demand Load Factor and Weighting Factor based on engineering assumptions.

***Incentives based on UES 2011 Program Planning.

Schools - New Plug Loads

Incentive Calculations
Advanced Power Strips

PROGRAM DATA	
Measure Life (yrs)*:	12
Program Life (yrs):	5
Demand AC ($/kW):	68.44
Summer On-pk Energy AC ($/kWh):	0.08
Summer Off-pk Energy AC ($/kWh):	0.06
Winter On-pk Energy AC ($/kWh):	0.08
Winter Off-pk Energy AC ($/kWh):	0.07
Program Admin Costs ($/kWh, saved)	NA
Discount Rate:	9.02%
Social Discount Rate	4.00%
NTG Ratio:	100%

RATE DATA	
Rate:	
$/kW:	0.00
$/kWh, On-Peak:	0.11
$/kWh, Off-Peak:	0.11

OPERATING DATA	
On-Pk Op. Hours:	38%
Off-Pk Op. Hours:	62%
Summer Ratio:	50%
Winter Ratio:	50%
Coincidence Factor:	1.00

OTHER FACTORS	
Line Loss Factor - Demand:	9.5%
Line Loss Factor - Energy:	9.5%
Capacity Reserve Factor:	0%
Application	RET
Cost Basis:	Full Installed

		DEMAND/ENERGY SAVINGS					INCENTIVE CALCULATIONS							CUSTOMER COST/SAVINGS				WGT.	%Incent	Societal
Measure Type	Size	# of Smart Strips	Non-Coincident Demand Savings (KW)	Coincident Demand Savings (KW)	On-pk Energy Savings (KWh)	Off-pk Energy Savings (KWh)	IRP PV Benefit ($)	Social PV Benefit ($)	Recommended Incentive** ($)	Recommended Incentive** %PV	Program Admin Costs ($)	PV Total Cost ($)	NPV ($)	Incr. Cost ($)	Cost Savings ($)	Payback wo/Inc. (yrs)	Payback w/Inc. (yrs)	Weighting Factor***	(%)	BC Ratio
Occupancy	8-outlet	1	0.044	0.044	65	105	117	154	90	77%	90	180	-26	90	19	4.7	0.0	100%	100%	0.9
	Weighted Average		0.044	0.044	65	105	117	154	90	77%	90	180	-26	90	19	4.7	0.0	100%	100%	0.9
Load Sensor	6-outlet	1	0.023	0.023	36	59	65	85	30	46%	30	60	25	30	11	2.8	0.0	31%	100%	1.4
	7-outlet	1	0.023	0.023	37	61	67	88	32	47%	32	63	25	32	11	2.8	0.0	8%	100%	1.4
	8-outlet	1	0.026	0.026	42	69	75	99	32	42%	32	64	35	32	13	2.5	0.0	31%	100%	1.5
	10-outlet	1	0.034	0.034	57	93	101	133	34	34%	34	68	65	34	17	2.0	0.0	31%	100%	2.0
	Weighted Average		0.027	0.027	45	73	79	104	32	41%	32	64	40	32	13	2.5	0.0	100%	100%	1.6
Timer Plug	8-outlet	1	0.047	0.047	81	132	142	187	19	13%	19	38	149	19	24	0.8	0.0	100%	100%	4.9
	Weighted Average		0.047	0.047	81	132	142	187	19	13%	19	38	149	19	24	0.8	0.0	100%	100%	4.9

*Measure life based on information in *Final Report Electronics and Energy Efficiency: A Plug Load Characterization Study* SCE0284. Prepared for Southern California Edison by Research Into Action. January 29, 2010.
**Incentives based on 2011 UES Program Planning.
***Weighting Factor based on engineering assumptions.